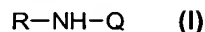


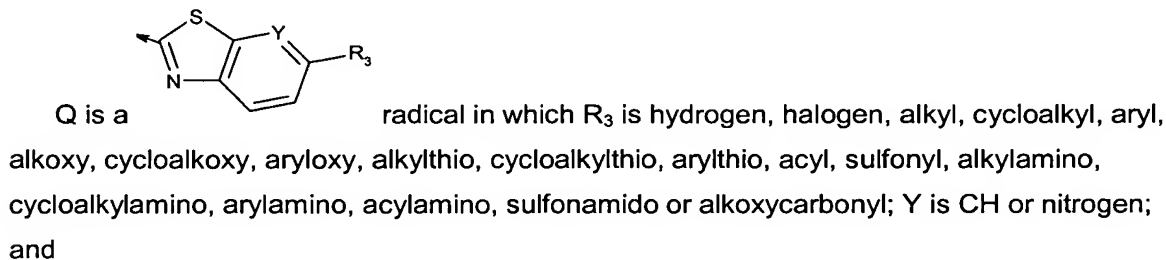
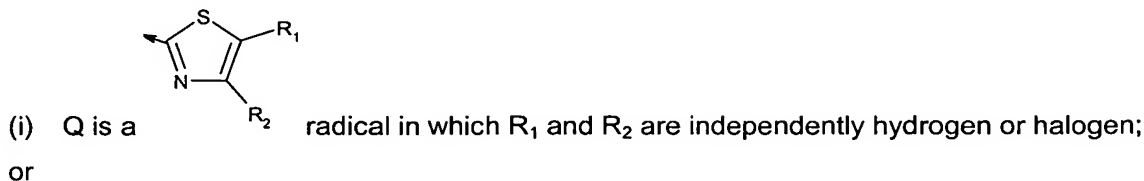
This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

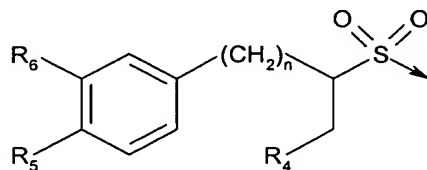
Claim 1 (original): A compound of the formula



wherein



R is a radical of the formula



wherein

R<sub>4</sub> is C<sub>2-4</sub>alkyl, C<sub>3-7</sub>cycloalkyl or C<sub>5-7</sub>heterocycloalkyl;

R<sub>5</sub> and R<sub>6</sub> are independently hydrogen, halogen, cyano, R<sub>7</sub>, -C(O)R<sub>7</sub> or -S(O)<sub>2</sub>R<sub>7</sub> wherein

R<sub>7</sub> is -(CR<sub>8</sub>R<sub>9</sub>)<sub>m</sub>-W-R<sub>10</sub> in which

R<sub>8</sub> and R<sub>9</sub> are independently hydrogen or lower alkyl;

W is a bond, O, S or -NR<sub>11</sub> in which

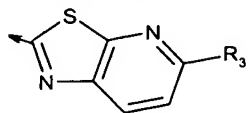
R<sub>11</sub> is hydrogen or lower alkyl;

R<sub>10</sub> is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or R<sub>10</sub> and R<sub>11</sub>, combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

m is zero or an integer from 1 to 5;

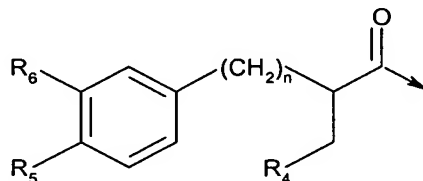
n is zero or an integer of 1 or 2;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof; or



(ii) Q is a radical in which  $R_3$  is hydrogen, halogen, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio, acyl, sulfonyl, alkylamino, cycloalkylamino, arylamino, acylamino, sulfonamido or alkoxycarbonyl; and

R is a radical of the formula



wherein

$R_4$  is  $C_{2-4}$ alkyl,  $C_{3-7}$ cycloalkyl or  $C_{5-7}$ heterocycloalkyl;

$R_5$  and  $R_6$  are independently hydrogen, halogen, cyano,  $R_7$ ,  $-C(O)R_7$  or  $-S(O)_2R_7$  wherein

$R_7$  is  $-(CR_8R_9)_m-W-R_{10}$  in which

$R_8$  and  $R_9$  are independently hydrogen or lower alkyl;

W is a bond, O, S or  $-NR_{11}$  in which

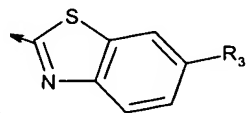
$R_{11}$  is hydrogen or lower alkyl;

$R_{10}$  is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or  $R_{10}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

m is zero or an integer from 1 to 5;

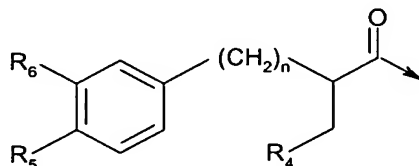
n is zero or an integer of 1 or 2;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof; or



(iii) Q is a radical in which  $R_3$  is hydrogen, halogen, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio, acyl, sulfonyl, alkylamino, cycloalkylamino, arylamino, acylamino, sulfonamido or alkoxycarbonyl; and

R is a radical of the formula



wherein

$R_4$  is  $C_{2-4}$ alkyl,  $C_{3-7}$ cycloalkyl or  $C_{5-7}$ heterocycloalkyl;

$R_5$  and  $R_6$  are independently hydrogen, halogen, cyano,  $R_7$ ,  $-C(O)R_7$  or  $-S(O)_2R_7$  wherein

$R_7$  is  $-(CR_8R_9)_m-W-R_{10}$  in which

$R_8$  and  $R_9$  are independently hydrogen or lower alkyl;

$W$  is a bond, O, S or  $-NR_{11}$  in which

$R_{11}$  is hydrogen or lower alkyl;

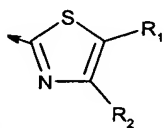
$R_{10}$  is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or  $R_{10}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

$m$  is zero or an integer from 1 to 5;

$n$  is zero or an integer of 1 or 2;

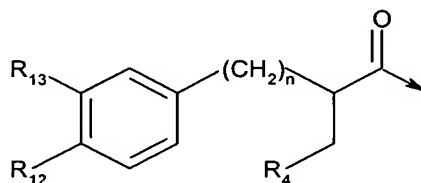
provided that: (1)  $R_5$  and  $R_6$  are not halogen when  $n$  is zero; or (2)  $R_5$  is not  $-S(O)_2R_7$ , wherein  $R_7$  is  $-(CR_8R_9)_m-W-R_{10}$  in which  $m$  is zero,  $W$  is a bond and  $R_{10}$  is  $C_{1-3}$ alkyl when  $n$  is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof; or



(iv) Q is a radical, wherein  $R_1$  and  $R_2$  are independently hydrogen or halogen; and

R is a radical of the formula



wherein

$R_4$  is  $C_{2-4}$ alkyl,  $C_{3-7}$ cycloalkyl or  $C_{5-7}$ heterocycloalkyl;

$R_{12}$  and  $R_{13}$  are independently hydrogen, halogen, cyano,  $R_{14}$ ,  $-C(O)R_{14}$ , or  $-S(O)_2R_{14}$  wherein

$R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which

$R_8$  and  $R_9$  are independently hydrogen or lower alkyl;

$W$  is a bond, O, S or  $-NR_{11}$  in which

$R_{11}$  is hydrogen or lower alkyl;

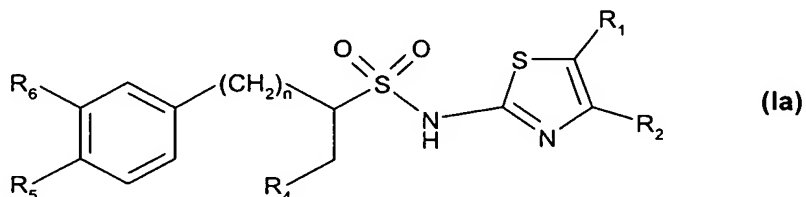
$R_{15}$  is cycloalkyl, aryl or heterocyclyl; or  $R_{15}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

$m$  is zero or an integer from 1 to 5;

$n$  is zero or an integer of 1 or 2;

provided that: (1)  $R_{12}$  and  $R_{13}$  both are not hydrogen, halogen, cyano or combinations thereof; (2)  $R_{12}$  is not  $-S(O)_2R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which  $m$  is zero and  $W$  is a bond when  $n$  is zero; (3)  $R_{12}$  is not  $-S(O)_2R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which  $R_8$  and  $R_9$  are hydrogen,  $m$  is 1 and  $W$  is a bond when  $n$  is zero; (4)  $R_{12}$  is not  $R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which  $m$  is zero and  $W$  is O when  $n$  is zero; or (5)  $R_{12}$  is not  $R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which  $m$  is zero and  $W$  is a bond when  $n$  is zero; or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 2 (original): A compound according to Claim 1 of the formula



wherein

$R_1$  and  $R_2$  are independently hydrogen or halogen;

$R_4$  is  $C_{2-4}$ alkyl,  $C_{3-7}$ cycloalkyl or  $C_{5-7}$ heterocycloalkyl;

$R_5$  and  $R_6$  are independently hydrogen, halogen, cyano,  $R_7$ ,  $-C(O)R_7$  or  $-S(O)_2R_7$  wherein

$R_7$  is  $-(CR_8R_9)_m-W-R_{10}$  in which

$R_8$  and  $R_9$  are independently hydrogen or lower alkyl;

$W$  is a bond, O, S or  $-NR_{11}$  in which

$R_{11}$  is hydrogen or lower alkyl;

$R_{10}$  is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or  $R_{10}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

$m$  is zero or an integer from 1 to 5;

$n$  is zero or an integer of 1 or 2;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

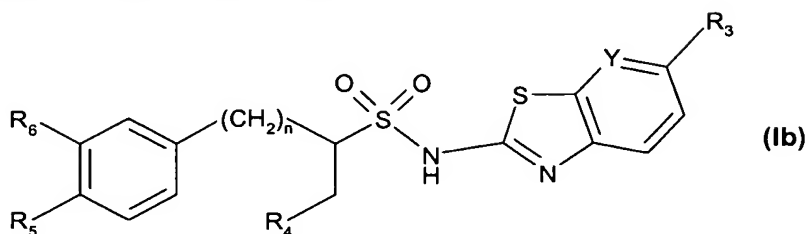
Claim 3 (original): A compound according to Claim 2, wherein

$R_4$  is cyclopentyl;

$n$  is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 4 (original): A compound according to Claim 1 of the formula



wherein

$R_3$  is hydrogen, halogen, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio, acyl, sulfonyl, alkylamino, cycloalkylamino, arylamino, acylamino, sulfonamido or alkoxycarbonyl;

$R_4$  is  $C_{2-4}$ alkyl,  $C_{3-7}$ cycloalkyl or  $C_{5-7}$ heterocycloalkyl;

$R_5$  and  $R_6$  are independently hydrogen, halogen, cyano,  $R_7$ ,  $-C(O)R_7$  or  $-S(O)_2R_7$  wherein

$R_7$  is  $-(CR_8R_9)_m-W-R_{10}$  in which

$R_8$  and  $R_9$  are, independently, hydrogen or lower alkyl;

$W$  is a bond, O, S or  $-NR_{11}$  in which  $R_{11}$  is hydrogen or lower alkyl;

$R_{10}$  is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or  $R_{10}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

$m$  is zero or an integer from 1 to 5;

$Y$  is CH or nitrogen;

$n$  is zero or an integer of 1 or 2;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

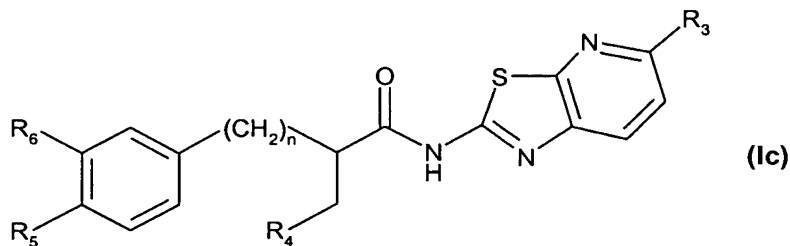
Claim 5 (original): A compound according to Claim 4, wherein

$R_4$  is cyclopentyl;

$n$  is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 6 (original): A compound according to Claim 1 of the formula



wherein

R<sub>3</sub> is hydrogen, halogen, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio, acyl, sulfonyl, alkylamino, cycloalkylamino, arylamino, acylamino, sulfonamido or alkoxycarbonyl;

R<sub>4</sub> is C<sub>2-4</sub>alkyl, C<sub>3-7</sub>cycloalkyl or C<sub>5-7</sub>heterocycloalkyl;

R<sub>5</sub> and R<sub>6</sub> are independently hydrogen, halogen, cyano, R<sub>7</sub>, -C(O)R<sub>7</sub> or -S(O)<sub>2</sub>R<sub>7</sub> wherein

R<sub>7</sub> is -(CR<sub>8</sub>R<sub>9</sub>)<sub>m</sub>-W-R<sub>10</sub> in which

R<sub>8</sub> and R<sub>9</sub> are, independently, hydrogen or lower alkyl;

W is a bond, O, S or -NR<sub>11</sub> in which

R<sub>11</sub> is hydrogen or lower alkyl;

R<sub>10</sub> is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or R<sub>10</sub> and R<sub>11</sub>, combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

m is zero or an integer from 1 to 5;

n is zero or an integer of 1 or 2;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

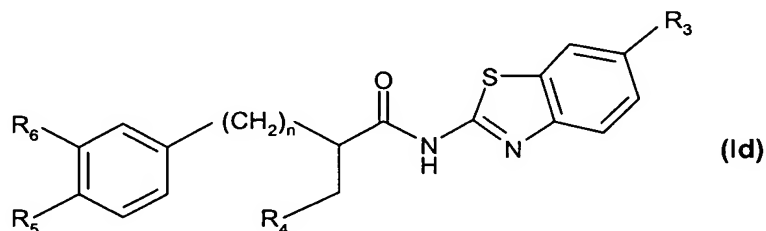
Claim 7 (original): A compound according to Claim 6, wherein

R<sub>4</sub> is cyclopentyl;

n is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 8 (original): A compound according to Claim 1 of the formula



wherein

R<sub>3</sub> is hydrogen, halogen, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio, acyl, sulfonyl, alkylamino, cycloalkylamino, arylamino, acylamino, sulfonamido or alkoxycarbonyl;

R<sub>4</sub> is C<sub>2-4</sub>alkyl, C<sub>3-7</sub>cycloalkyl or C<sub>5-7</sub>heterocycloalkyl;

R<sub>5</sub> and R<sub>6</sub> are independently hydrogen, halogen, cyano, R<sub>7</sub>, -C(O)R<sub>7</sub>, or -S(O)<sub>2</sub>R<sub>7</sub> wherein

R<sub>7</sub> is -(CR<sub>8</sub>R<sub>9</sub>)<sub>m</sub>-W-R<sub>10</sub> in which

$R_8$  and  $R_9$  are, independently, hydrogen or lower alkyl;

W is a bond, O, S or  $-NR_{11}$  in which

$R_{11}$  is hydrogen or lower alkyl;

$R_{10}$  is hydrogen, alkyl, cycloalkyl, aryl or heterocyclyl; or  $R_{10}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

m is zero or an integer from 1 to 5;

n is zero or an integer of 1 or 2;

provided that: (1)  $R_5$  and  $R_6$  are not halogen when n is zero; or (2)  $R_5$  is not  $-S(O)_2R_7$ , wherein

$R_7$  is  $-(CR_8R_9)_m-W-R_{10}$  in which m is zero, W is a bond and  $R_{10}$  is  $C_{1-3}$ alkyl when n is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

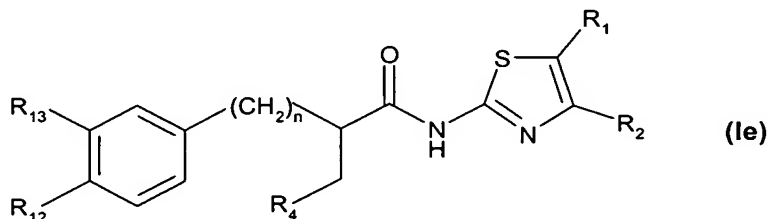
Claim 9 (original): A compound according to Claim 8, wherein

$R_4$  is cyclopentyl;

n is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 10 (original): A compound according to Claim 1 of the formula



wherein

$R_1$  and  $R_2$  are independently hydrogen or halogen;

$R_4$  is  $C_{2-4}$ alkyl,  $C_{3-7}$ cycloalkyl or  $C_{5-7}$ heterocycloalkyl;

$R_{12}$  and  $R_{13}$  are independently hydrogen, halogen, cyano,  $R_{14}$ ,  $-C(O)R_{14}$ , or  $-S(O)_2R_{14}$

wherein

$R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which

$R_8$  and  $R_9$  are, independently, hydrogen or lower alkyl;

W is a bond, O, S or  $-NR_{11}$  in which

$R_{11}$  is hydrogen or lower alkyl;

$R_{15}$  is cycloalkyl, aryl or heterocyclyl; or  $R_{15}$  and  $R_{11}$ , combined, are alkylene which together with the nitrogen atom to which they are attached form a 5- to 7-membered ring;

m is zero or an integer from 1 to 5;

n is zero or an integer of 1 or 2;

provided that: (1)  $R_{12}$  and  $R_{13}$  both are not hydrogen, halogen, cyano or combinations thereof; (2)  $R_{12}$  is not  $-S(O)_2R_{14}$  wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which m is zero and W is a bond when n is zero; (3)  $R_{12}$  is not  $-S(O)_2R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which  $R_8$  and  $R_9$  are hydrogen, m is 1 and W is a bond when n is zero; (4)  $R_{12}$  is not  $R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which m is zero and W is O when n is zero; or (5)  $R_{12}$  is not  $R_{14}$ , wherein  $R_{14}$  is  $-(CR_8R_9)_m-W-R_{15}$  in which m is zero and W is a bond when n is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 11 (original): A compound according to Claim 10, wherein

$R_4$  is cyclopentyl;

n is zero;

or an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

Claim 12 (original): A method for the activation of glucokinase activity in mammals which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of Claim 1.

Claim 13 (original): A method for the prevention and/or treatment of conditions associated with glucokinase activity in mammals which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of Claim 1.

Claim 14 (original): The method according to Claim 13, which method comprises administering said compound in combination with a therapeutically effective amount of insulin, insulin derivative or mimetic; insulin secretagogue; insulinotropic sulfonylurea receptor ligand; PPAR ligand; insulin sensitizer; biguanide; alpha-glucosidase inhibitors; GLP-1, GLP-1 analog or mimetic; DPPIV inhibitor; PTP-1B inhibitor; HMG-CoA reductase inhibitor; squalene synthase inhibitor; FXR or LXR ligand; cholestyramine; fibrates; nicotinic acid or aspirin.

Claim 15 (original): A method for the treatment of impaired glucose tolerance, Type 2 diabetes and obesity which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of Claim 1.

Claim 16 (original): A pharmaceutical composition comprising a therapeutically effective amount of a compound of Claim 1 in combination with one or more pharmaceutically acceptable carriers.



Claim 17 (original): A pharmaceutical composition comprising a therapeutically effective amount of a compound of Claim 1 in combination with a therapeutically effective amount of insulin, insulin derivative or mimetic; insulin secretagogue; insulinotropic sulfonylurea receptor ligand; PPAR ligand; insulin sensitizer; biguanide; alpha-glucosidase inhibitors; GLP-1, GLP-1 analog or mimetic; DPPIV inhibitor; HMG-CoA reductase inhibitor; squalene synthase inhibitor; FXR or LXR ligand; cholestyramine; fibrates; nicotinic acid; or aspirin.

Claim 18 (currently amended): A pharmaceutical composition according to claim 16 or 17 for the treatment of impaired glucose tolerance, Type 2 diabetes and obesity.

Claims 19 - 23 (cancelled)

Claim 24 (new): A pharmaceutical composition according to claim 17 for the treatment of impaired glucose tolerance, Type 2 diabetes and obesity.